

SUNNYWAY TECHNOLOGY(CHINA)

ANTENNA SPEC

Company name : Tianbo (Shenzhen) Co., Ltd		Entry name : T20
Working band:4G-LTE: B1/3/5/8/38/39/40/41		
Motherboard version :		
Sunnyway Material specification		
Specification type	Sunnyway number	Customer number
DIV Antenna	SZ22060IB77-2	

Revision history			
Date of preparation/change	Change content	Altered person	Edition
2023.06.08	New issue	Chen min	A

Sunnyway Countersign column				
R&D	ME :	To examine :	QE :	Approval :
	RF :	To examine :		

Customer will sign the column			
Electronic Engineer	Project manager	Structural Engineer	Quality Engineer

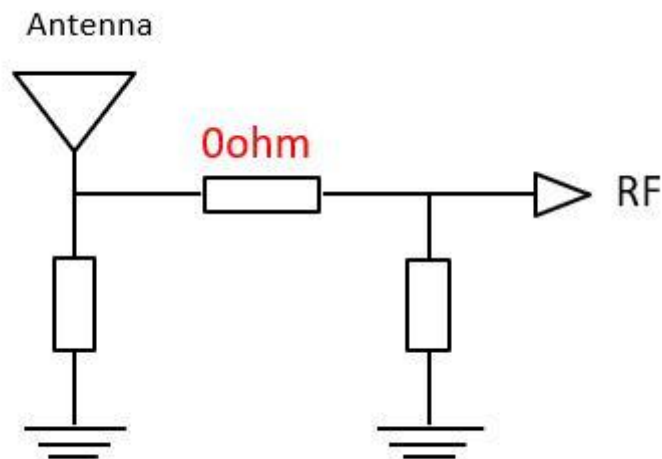
Directory

ANTENNA SPEC.....	1
1. Project information.....	3
1.1 Mockup picture.....	3
2. Matching circuit.....	4
3. Antenna passive testing data.....	4
3.1 S11 Description of the test method.....	4
3.2 S11 Test parameters.....	5
3.3 Antenna efficiency and gain.....	6
3.3.1 Antenna Efficiency.....	6
4. testing environment.....	8
4.1 Test the environment.....	8
5. Environmental treatment methods.....	9
6. Standard for mass production antennas.....	9
7. Engineering drawings.....	11

1. Project information



2. Matching circuit



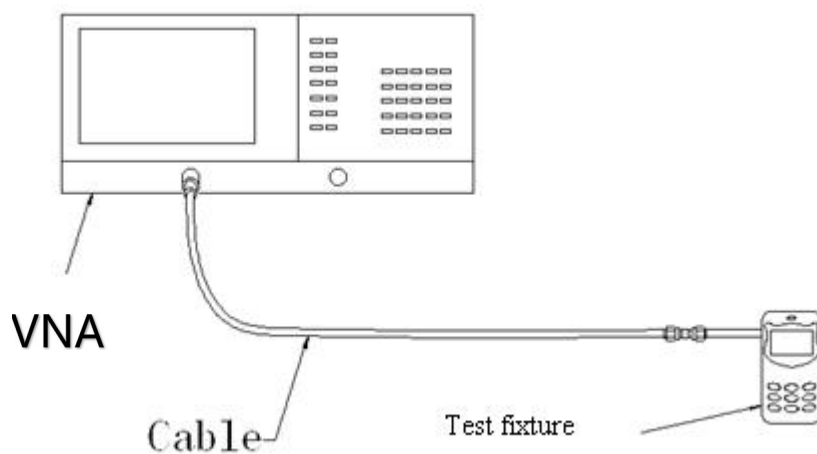
3. Antenna passive testing data

3.1 S11 Description of the test method

Test the equipment : Vector network analyzer (Agilent E5071C)

Test methodology : Use a 50 ohm CABLE cable to export from the instrument test port, use the calibration piece to calibrate and connect the SMA connector of the test fixture, and record the return loss and standing wave ratio corresponding to the relevant frequency point.

Below is a schematic picture of the test :

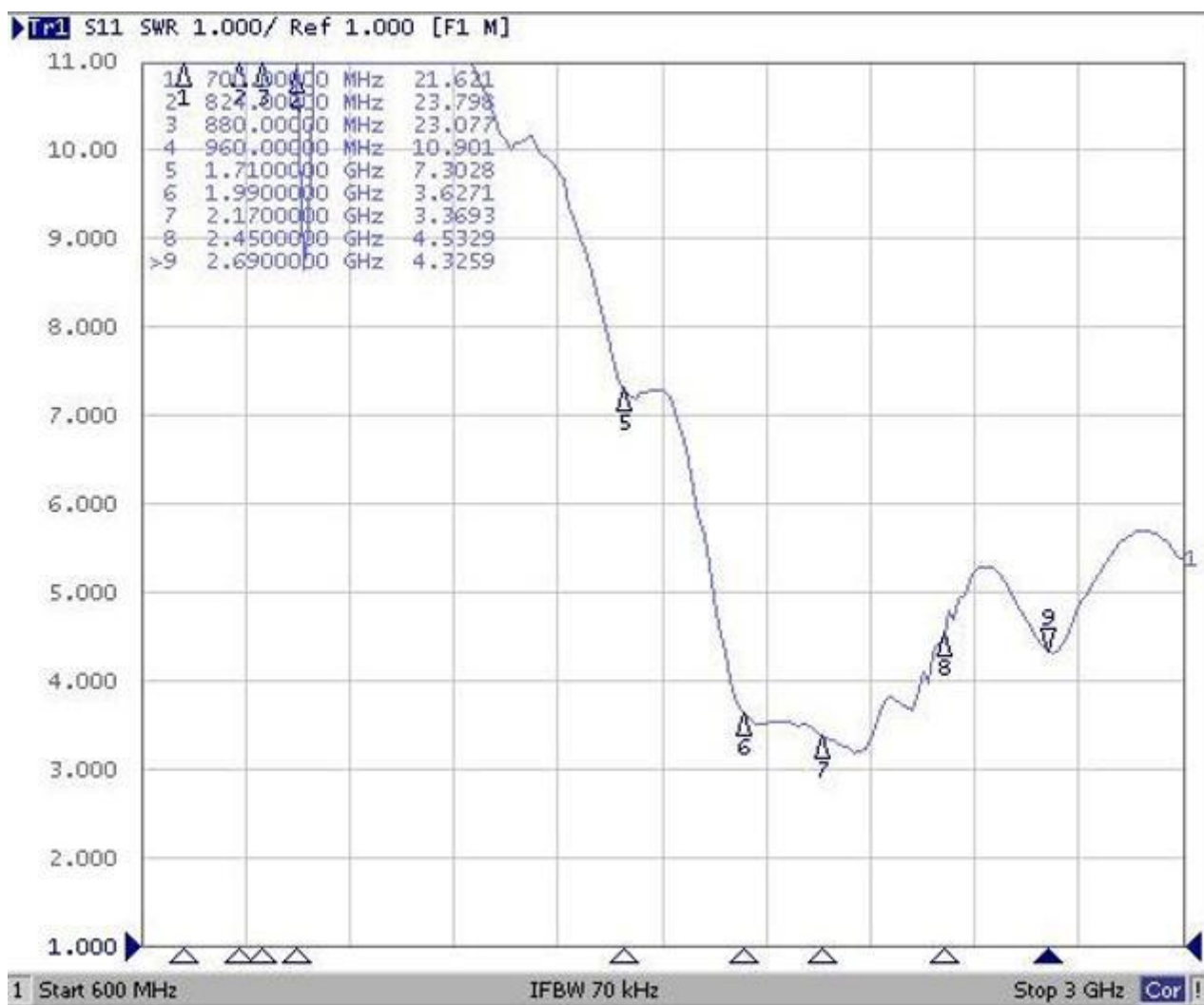


Test schematic diagram

3.2 S11 Test parameters

(Freq.) MHz	1710	2170	2450	2690
VSWR	7.3	3.3	4.5	4.3

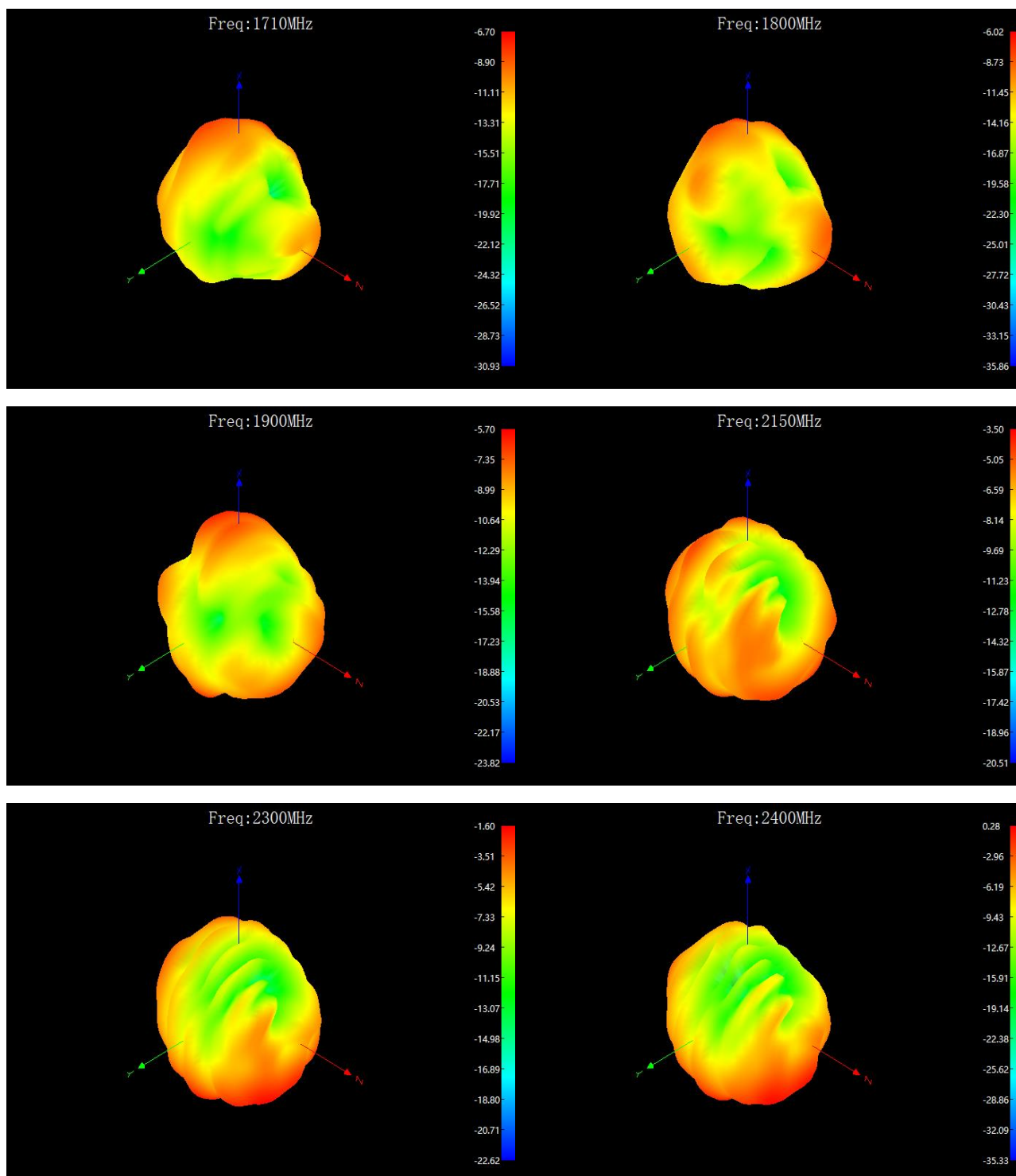
驻波比 VSWR

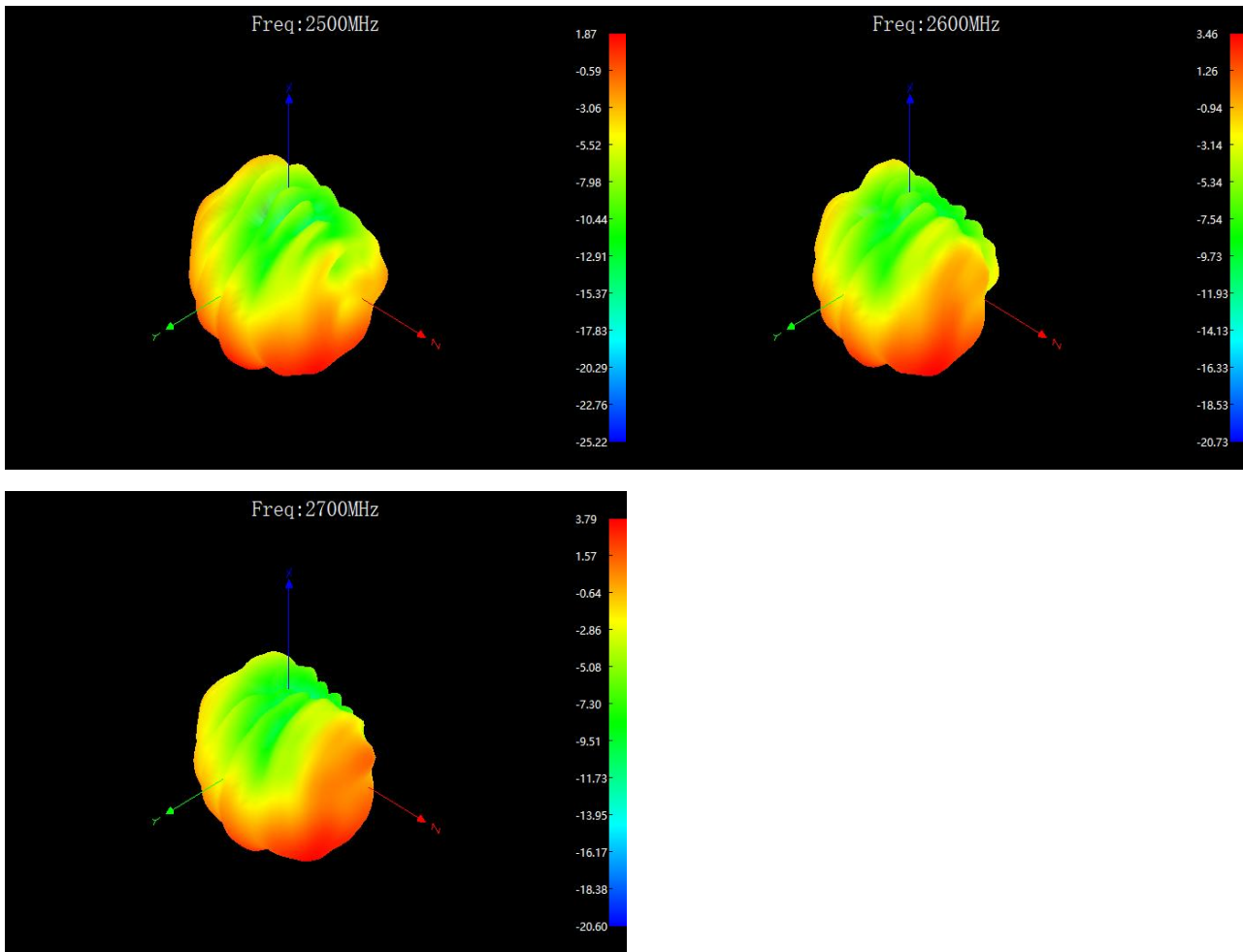


3.3 Antenna efficiency and gain

3.3.1 Antenna Efficiency

Frequency/MHz	MaxGain/dBi	Efficiency / %	Frequency/MHz	MaxGain/dBi	Efficiency / %	Frequency/MHz	MaxGain/dBi	Efficiency / %	Frequency/MHz	MaxGain/dBi	Efficiency / %
1710	-1.92	16.89	1960	-1.34	26.12	2210	1.13	31.7	2460	-0.02	22.54
1720	-2.11	16.93	1970	-1.55	26.67	2220	1.02	31.41	2470	0.81	25.06
1730	-2.2	16.84	1980	-1.7	26.92	2230	0.97	32.43	2480	0.54	24.89
1740	-2.09	17.19	1990	-1.64	27.29	2240	0.64	31.92	2490	0.85	24.89
1750	-2.15	17.67	2000	-1.63	26.79	2250	0.56	31.92	2500	0.8	25.29
1760	-2.41	17.47	2010	-1.47	27.1	2260	0.44	31.55	2510	0.37	23.01
1770	-2.34	17.86	2020	-1.31	26.55	2270	0.08	29.58	2520	0.34	23.17
1780	-1.99	18.48	2030	-1.18	26.3	2280	-0.27	27.99	2530	0.29	22.91
1790	-1.91	18.3	2040	-0.77	27.42	2290	-0.37	26.36	2540	-0.06	21.68
1800	-1.48	19.02	2050	-0.77	27.04	2300	-0.58	23.71	2550	-0.05	21.78
1810	-1.41	19.33	2060	-0.81	26.36	2310	-0.63	22.44	2560	-0.11	21.78
1820	-1.3	19.68	2070	-0.8	26.61	2320	-0.81	22.86	2570	-0.3	20.94
1830	-1	17.8	2080	-0.61	27.35	2330	-1.05	22.65	2580	-0.3	20.37
1840	-1.64	14.79	2090	-0.52	27.48	2340	-1.03	24.43	2590	-0.05	21.13
1850	-1.41	15.74	2100	-0.17	28.31	2350	-0.25	26.92	2600	-0.22	20.75
1860	-2.14	16.67	2110	0.07	29.44	2360	0.12	28.25	2610	-0.4	21.13
1870	-2.07	17.3	2120	0.25	30.13	2370	0.49	28.97	2620	-0.48	21.73
1880	-2.12	17.42	2130	0.15	29.58	2380	0.75	29.99	2630	-0.45	21.73
1890	-2.15	18.11	2140	0.13	29.31	2390	0.47	27.42	2640	-0.27	21.78
1900	-2.06	18.97	2150	0.06	29.24	2400	0.25	25.23	2650	0.04	22.75
1910	-2.01	19.68	2160	0.27	29.85	2410	0.76	26.67	2660	0.42	23.28
1920	-1.8	20.8	2170	0.53	30.97	2420	0.43	25.88	2670	0.61	23.33
1930	-1.48	22.28	2180	0.71	30.62	2430	0.26	23.55	2680	0.87	23.17
1940	-1.4	23.44	2190	0.93	31.19	2440	0.82	25.35	2690	0.78	22.39
1950	-1.33	24.6	2200	1.17	31.92	2450	0.64	25.12	2700	0.75	21.23





4. testing environment

4.1 Test the environment

Test the system : Multi-probe OTA measurement system (XH-IoT)

Test the environment : Temperature $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$, humidity $50\% \pm 15\%$

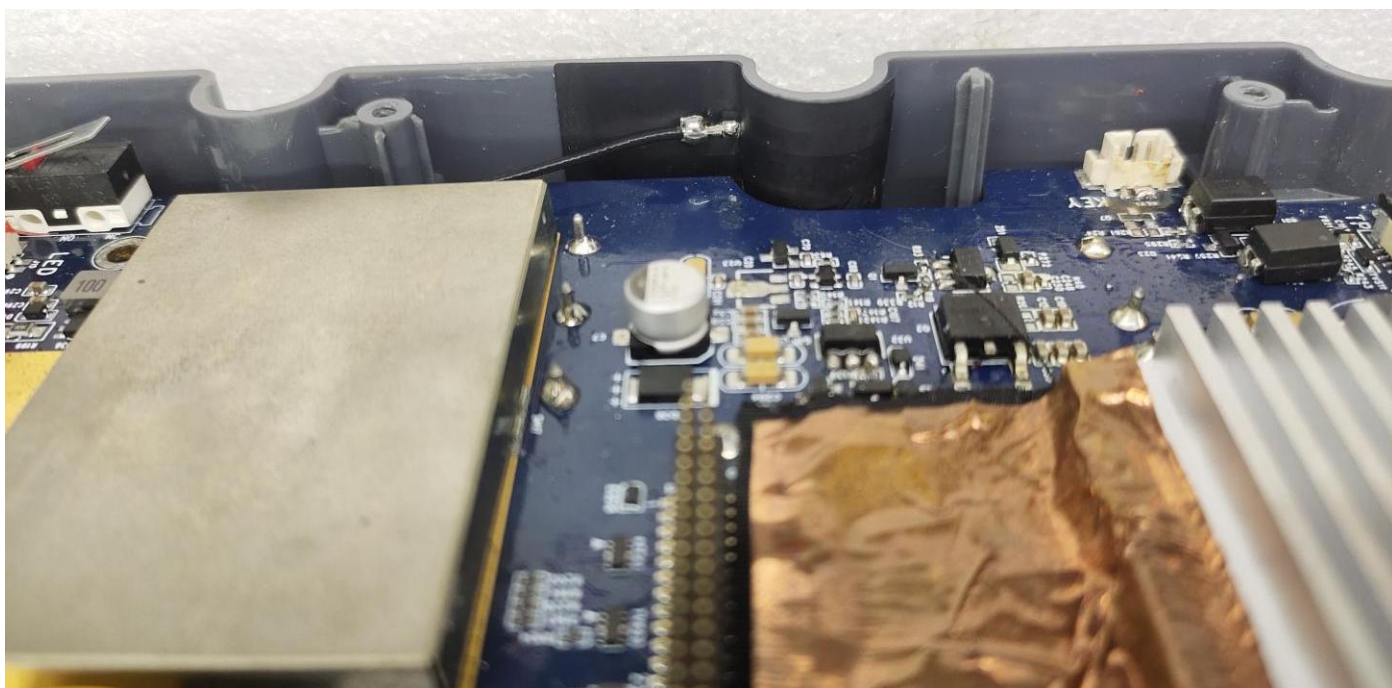
Test the equipment : When testing passive data, use the network analyzer R&S ZND/ Agilent

E5071C

When testing active data, use the Agilent 8960/CMW500/SP9500E/SP8315



5. Environmental treatment methods



6. Standard for mass production antennas

When the antenna is mass-produced, the VSWR is used as the mass production test standard.

According to the differences in the project itself, the following criteria are given:

Freq. (MHz)	Mass production standards
824-960	$VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) + 0.5$
1710-2690	$VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) + 0.5$

7. Engineering drawings

